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ABSTRACT

In response to concern about the supply of minority faculty available to replace retiring academics, a study investigated academic achievement in doctoral programs by two of the United States' fastest-growing subpopulations, Mexican-Americans (MA) and American Indians (AI). The objectives were to establish a conceptual framework, to refine existing methodology, and to develop a model of minority student achievement in doctoral programs, extending earlier research not focusing on these groups. The study targeted this population in six universities in five southwestern states. A total of 343 students (291 Hispanic and 52 American Indian) in all disciplines awarding Ph.D. or Ed.D. degrees were surveyed, and from these, 214 usable responses were received--176 from Hispanics identified as MAs and 38 from AIs. The variables investigated were those with the greatest effect on four outcomes: doctoral satisfaction, doctoral grade point average, intent to finish, and intent to enter college faculty. Results demonstrate that there are strong effects of the extracted factors relating to the doctoral academic experience that ultimately lead to doctoral achievement for these populations. Especially salient were effects of gender, mentoring, faculty relationships, feelings of racial discrimination and alienation, perceptions and experiences of faculty and departmental attitudes, academic self-concept, aspirations, and family support. Based on the findings, a structural model for academic achievement factors among Mexican-American and American Indian doctoral students is being developed. Includes 15 references. (MSE)

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Mexican American and American Indian Students
in Doctoral Programs

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ASSOCIATION FOR THE STUDY OF HIGHER EDUCATION

This paper was presented at the annual meeting of the Association for the Study of Higher Education held at the Red Lion-Jantzen Beach in Portland, Oregon, November 1-4, 1990. This paper was reviewed by ASHE and was judged to be of high quality and of interest to others concerned with the research of higher education. It has therefore been selected to be included in the ERIC collection of ASHE conference papers.

Factors Related to Academic Outcomes of
Mexican American and American Indian Students
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RATIONALE

The production of a greater number of minority doctorates is one of the major policy issues in higher education. Minority doctorates represent future faculty who are the key role models to undergraduate minority students, who may in turn go to graduate school and become future faculty.

Due to the scarcity of minority doctorates being produced by graduate schools (Mooney, 1989), universities have escalated the already intense competition for minority faculty. Instead of increasing the flow of new minority doctorates into university faculties, the graduate pipeline supplying minority doctorates continues to produce only a trickle of minority doctorates.

A large number of retirements will impact the academic labor force through the remainder of this century: approximately half of the existing professorial positions are now held by persons within fifteen years of usual retirement age (Adams, 1988; Mooney, 1990). Minority students may not be able to take full advantage of this favorable climate due to their continuing underrepresentation among annual doctoral recipients. If this situation is to be rectified, universities with doctoral programs must play the major role in identification, enrollment and degree attainment of minority doctoral students.

Little research has been conducted on factors determining academic outcomes of ethnic minority students enrolled in doctoral programs. Nettles (1989) has provided the first significant data base on ethnic minority doctoral students and their academic achievement. He developed the Nettles Doctoral Student Survey (DSS) for the purpose of providing baseline data and information describing backgrounds, educational preparation, graduate experiences, and academic performance of minority students in doctoral programs. The Nettles DSS was administered to 1,286 African American (AFA), Hispanic/Puerto Rican (HPR), and White/Non-Hispanic (W/NH) doctoral students at four major Eastern research universities (1989).

STATEMENT OF THE PROBLEM

Much more research needs to be conducted on the vital issues of improving attainment of doctorates by ethnic minorities. In order to contribute significantly to knowledge on this issue such research must be embedded within a relevant conceptual framework, utilize thorough and sophisticated analysis methodologies and contribute toward development of a theoretical model of minority student academic achievement in doctoral programs. Particularly needed are

data on Mexican Americans (MAs) and American Indians (AIs), two ethnic groups not included in the Nettles (1990) study. These two groups are among the fastest growing subpopulations in the United States. The Hispanic population overall is projected to be the largest of all minority groups shortly after the turn of the century, and Mexican Americans are the largest, youngest and fastest growing portion of the Hispanic population. Both MAs and AIs are concentrated in the Southwest. The present study targets these two minority groups in six research universities in five Southwestern states. The principal objectives around which this investigation coalesces are:

1. To utilize the Nettles (1990) conceptual framework for studying minority achievement at the doctoral level as the basis for investigating factors of academic achievement in minority doctoral students at six Southwestern research universities. Most of the current literature relating to minority doctoral achievement concerns the demographic and enrollment characteristics of minority graduate students and their personal and background characteristics. Those which focus on doctoral student experiences, behavior, or institutional characteristics related to minority doctoral achievement are sparse. The Nettles (1990) Conceptual Model of Factors Related to Minority Students' Experiences and Outcomes in their Doctoral Programs provided a more comprehensive view of minority doctoral achievement and was used as the conceptual framework to guide the study and to test for paired comparisons among groups and within groups.
2. To extend the data base on ethnic minority doctoral students developed by Nettles (1989) by collecting comparable data on Mexican American (MA) and American Indian (AI) doctoral students attending six Southwestern research universities. Underrepresentation in the doctoral ranks is particularly serious for the two cohorts of this study. Minority representation among the U.S. population approaches 25 percent nationally and represents nearly one-third of the population of the Southwest in 1990. However, all minorities received only 7.5 percent of the doctorates awarded in 1988, a decline of one-half percent from the previous decade (NCES, 1989). At the close of the decade, minority group members will become the majority population in the Southwest, representing over 50 percent of the population of the region, and will nationally represent one-third of the nation (U.S. Bureau of the Census, 1983).

3. To refine and further develop the existing Nettles conceptual framework by applying multivariate statistical analyses to the newly extended data base. Little is known about factors which interact to facilitate achievement or those which are barriers to achievement for Mexican American and American Indian doctoral students. Such factors may include undergraduate preparation, how students made the transition from undergraduate to graduate school, whether they experienced significant "stop out" periods, ability to attain acceptably high doctoral grade point averages (DGPA) in doctoral level courses, their degree of academic integration in the institution, feelings of racial discrimination and alienation, relationship with faculty mentors, and their overall satisfaction with the doctoral program. The goal of this study was to investigate factors which influence and enhance academic achievement among these two groups of doctoral students, as well as factors which prove to be barriers to such achievement, thereby contributing knowledge that can lead to institutional efforts to increase the production of minority doctorates.

PERSPECTIVES

A. Astin (1982) mapped persistence and attrition patterns for four ethnic minority groups (AFA, H/PR, AI, MA) and W/NHs starting with high school and finishing with completion of graduate and/or professional school. One of A. Astin's most significant conclusions concerned the concept of minority "leakage." Astin found that at each "transition point" in higher education, minorities were increasingly underrepresented; all minority groups suffered disproportionately high losses at each higher education transition point, and MAs and AIs were the most underrepresented and suffered the highest leakage at all transitional levels of the system (A. Astin, 1982, p. 175). By the time the doctoral level is reached, the minority pool has been largely decimated.

Although considerable research has been done on how minority undergraduate students compare with majority students on achievement indicators of background, experience, and performance, very little is known about the determinants of achievement for ethnic minority students who persist to reach the doctoral level. Astin's study showed that 48 percent of AIs, and 52 percent of MAs and H/PRs drop out of graduate study before completing a degree (1982, p. 177). Data collected through the federal Integrated Postsecondary Education Data System (IPEDS) suggest that all racial/ethnic groups were at, or very near, their all-time highs of graduate enrollments in 1986. The question remains whether that "all time high" begins to approach a level adequate to

furnish the pool of minority doctorates needed to significantly increase minority representation among university faculty and in leadership and policy-making positions in higher education. The question especially resonates in light of the data that the three most underrepresented minority groups (AFAs, HAs, AIs) received only 6.2 percent of all doctorates awarded in 1989 (NCES, 1990) and far less than half of those intend to pursue academic careers (Brown, 1988). Those same minority groups represented but 6.1 percent (AFA = 4.1 percent, HA = 1.7 percent, AI = 0.3 percent) of all faculty in four-year institutions in 1985, while undergraduate minority representation is currently over 18 percent (Mooney, 1989).

The number of minority students completing doctoral degrees must be multiplied several-fold if more equal representation among faculty members in institutions of higher education is to ever be achieved. Without increased minority doctoral graduation rates across all fields of study, institutional goals of increasing minority faculty cannot be met.

DATA SOURCES

From a total N of 343 (Hispanic N = 291; American Indian N = 52) minority doctoral students enrolled during the fall of 1989 and spring of 1990 at six major research institutions in the Southwest, 318 responses were received to the Nettles DSS for a response rate of 92.7 percent. All disciplines that grant a Ph.D. or Ed.D. were included. Mean age of the respondents was 36.4 years. In rank order of oldest to youngest the mean age of the four minority/gender subgroups were: MA(F) = 37.6; AI(M) = 37.1; MA(M) = 35.6; and AI(F) the youngest at 35.1 years. Males constituted 54 percent of the respondents. Of the 291 respondents whom institutions identified as Hispanic, 189, or 64.9 percent of the cohort self-identified as Mexican American (MA). Of the MA responses, 176 were useable. The responding American Indian (AI) cohort (N = 38) does not seem large, but it should be noted that nationally, only 91 doctorates were awarded to AIs in 1989. Similarly, the MA cohort (N = 176) represents nearly one-third of the 594 total doctorates awarded to all Hispanics in 1989. Nationally, MAs constitute only 0.6 percent of all doctorates annually awarded to Hispanic groups, although they represent 60 percent of the national Hispanic population. American Indians are even more underrepresented among doctoral recipients: they received 0.4 percent of all doctorates (NCES, 1989; National Research Council, 1990).

A modification of the Nettles DSS contained 186 multiple choice response items, and was 32 pages in length. A closing, open-ended question asked subjects to share information about their doctoral experience in their program and

institution and also asked for comments which they thought might help future minority doctoral students of their ethnicity in their future achievement and doctoral satisfaction. Written responses to the qualitative question were received from 139 of the final respondents for a response rate of 64.9 percent. The subjects frequently contributed lengthy qualitative accounts of their doctoral experiences. This qualitative transcript will serve as the basis for future expanded triangulation on the empirical results of the study.

METHODOLOGY

The study focused on identifying the variables that had the greatest effect on the two outcomes which had been targeted in the Nettles (1990) study (Doctoral Satisfaction and Doctoral Grade Point Average). The present study added two additional outcomes, namely, Intent to Finish and Intent to Enter College Faculty. No a priori hypotheses regarding the significance of any of the existing variables for doctoral outcomes was postulated.

Discriminant Analysis (DA) was performed using Nettles' (1990) suggested variables for the purpose of identifying at what degree the two ethnic groups that were studied could be correctly classified. The attractiveness of DA is its: 1) parsimony of description, and 2) clarity of interpretation (Stevens, 1986, p. 232). Based upon Principal Components Factor Analysis, 21 factors were extracted. Findings of the DA suggest that the 21 extracted factors can classify a high degree of accuracy. There were no misclassifications. For the DA classification, 214 cases were processed, with 155 excluded for missing or out-of-range group codes. Fifty-nine unweighted cases were then used in the DA classification procedure. Overall, this discriminant model and absence of misclassifications suggests that such factors could be used to correctly identify ethnic background of the two ethnic cohorts.

Descriptive statistics were performed for exploratory purposes and crosstabulations calculated for all items, with the two ethnic cohorts divided by gender. Background characteristics and key findings of the subjects' doctoral experiences are synthesized in Table 1.

Principal Components Factor Analysis was performed to extract factors (components) that were responsible for describing the doctoral program outcomes. Chi-square analyses were performed to test for relationships between gender/ethnicity and the survey items and extracted factors. One-Way Analysis of Variance (ANOVA) tests were performed to illustrate the mean response difference between the gender/ethnicity categories.

RESULTS AND CONCLUSIONS

For the Principal Components analysis, two separate factor analyses were performed. First, all 53 items pertaining to faculty/student interaction, departmental and institutional environment were analyzed as a separate unit. These 53 items resulted in 12 factors which accounted for 68 percent of the variance. The first of these 12 factors (quality of faculty instruction) constituted 29.6 percent of the cumulative variance. Only eigenvalues greater than one were reported and individual factor loadings greater than .40 were included (Cliff and Hamburger, 1967) as indicating significance. A second extraction of factors utilized 31 items related specifically to the advisor/mentor relationship and doctoral student participation in academic, professional and social functions. The second analyses resulted in 9 factors which accounted for 69 percent of the variance. Two items (advisor/student gender and ethnic similarity) constituted 32.6 percent of the cumulative variance. The analyses was performed using the method of principal factors with R^2 in the diagonal of the correlation matrix. Because the investigators were interested in achieving a maximum separation of factors, a varimax rotation (Kaiser, 1960) was performed throughout. Iteration was performed until there was no further significant increase in communality (h^2).

Results of the final rotation of the Principal Components factor analysis are summarized in Table 2A/2B, illustrating the individual loadings within each of the 21 factors. Reliability analysis of each of the factors using Cronbach's alpha revealed especially significant results regarding the relationship of doctoral student and advisor/mentor: both the factor item of Student/Advisor Ethnic Similarity and the factor item of Student/Advisor Gender Similarity had variances of .0000. The individual factor loadings for these two items related to student/advisor ethnic similarity and student/advisor gender similarity were .90254 and .94085 respectively. These were the two highest loadings of any of the individual items contained within the 21 factors of the study.

No significant differences between the two ethnic groups were found. As groups, both MAs and AIs responded with amazing similarity on all items of the survey instrument. However, using the Least Significant Differences (LSD) procedure for testing significance within pairs of groups, there were significant within group differences at the .10 level when the two ethnicities were divided by gender. Table 3 summarizes the items from the factor analysis and selected variables where the greatest significance occurred within the four-group division of AI(M), AI(F), MA(M), and MA(F). Using a matrix design, the LSD results are indicated in the table (e.g. AI(M) differs significantly

from AI(F) = a; AI(M) differs significantly from MA(M) = b, etc.).

Results of the study demonstrated that there are strong effects of the extracted factors relating to the doctoral academic experiences which ultimately lead to doctoral achievement for MA and AI doctoral students. Especially salient were findings on the effects and impacts of gender, mentoring, faculty relationships, feelings of racial discrimination and alienation experienced in the doctoral programs, perceptions and experiences of departmental and institutional attitudes, academic self-concept, aspirations, and family support.

Women especially reported academic experiences which were impediments to access and equality, had lower academic self-concepts and perceived that their institution was much more discriminatory than male counterparts. Results also demonstrated that institutions must go far beyond recruitment of minority doctoral students. Institutions must integrate them fully into the institution, provide mentors especially of like gender and ethnicity, and create departmental environments that are conducive to degree completion.

IMPORTANCE OF THE STUDY

Three barriers prevent adequate representation of minorities on faculties: (1) getting through the gauntlet to doctoral education; (2) achieving the doctorate; and eventually, (3) being appointed to a full-time faculty position. Without successful coordination of institutional efforts to eliminate barriers at all three checkpoints, the goal of increased ethnic minority faculty among the academic ranks cannot be achieved.

Even though institutions have made substantial efforts in rectifying the imbalance of minority students and faculty on their campuses, there remains a paucity of research which addresses how higher education institutions may remedy the persistent inequity in participation and benefits to specific groups and how institutions may best drastically accelerate the process.

The five states for the setting of this study (Arizona, California, Colorado, New Mexico and Texas) have total minority enrollment across all levels of institutions ranging from 11.9 percent to 36.1 percent. These states have both the opportunity and obligation to become major producers of minority doctorates. For MAs and AIs included in those percentages, research must be conducted, efforts must be doubled and re-doubled, and policies enacted which will prevent the dire attrition of those percentages to the national figures of only 0.6 percent and 0.4 percent respectively in doctoral attainment.

The study has proven the great significance of the influence of ethnic and gender role models. As role models, ethnic minority faculty have a special and direct influence on the recruitment, retention, and future career aspirations of successive generations of minority scholars and professionals. Ethnic faculty role models heavily influence the interests and career goals of their students as well as their philosophical, theoretical, and scientific views (Bernal, 1980, p. 135). Bernal's synthesis of difficulties in producing minority graduate students and minority faculty in psychology further posits that since 95 percent of faculty members are predominantly male and White/Non-Hispanic (W/NH), graduate students are likely to learn that minority/gender-related research and curricula content are ignored (1980).

This study will serve to guide future research in the area of minority doctoral achievement, to contribute further knowledge that can lead to institutional efforts to increase the production of minority doctorates, and to nurture, retain and encourage their entrance into academic careers. Based upon the strength of the results of this study, a structural equation model for Factors of Academic Achievement Among Mexican American and American Indian Doctoral Students is being developed.

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TABLE 1: CROSSTABULATIONS FOR BACKGROUND/EXPERIENCES

VARIABLE	MALE		FEMALE		PERCENT T GROUP	df	Chi- Sq.	Significance
	MA	AI	MA	AI				
MEAN AGE	35.6	37.1	37.6	35.1				
<u>Elem and High School</u>								
<u>Grad in Same State</u>						3	2.754	.4311
• Yes	86.3	76.2	82.7	94.1				
• No	13.7	23.8	17.3	5.9				
<u>Mother's Occupation</u>						9	13.86	.1270
• Homemaker	61.1	42.9	42.3	47.1				
• Laborer	21.1	19.0	17.9	11.8				
• Skilled/Sm Bus	10.5	19.0	26.9	29.4				
• Professional	7.4	19.0	12.8	11.8				
<u>Father's Occupation</u>						6	18.67	.0047
• Laborer	53.7	55.0	24.4	37.5				
• Skilled/Sm Bus	27.4	20.0	50.0	43.8				
• Professional	18.9	25.0	25.6	18.8				
<u>Marital Status</u>						12	13.67	.3219
• Married	60.0	47.6	42.0	41.2	50.5			
• Single/Partner	4.2	9.5	6.2	17.6	6.5			
• Single	25.3	33.3	33.3	17.6	28.5			
• Divorced	9.5	9.5	14.8	17.6	12.1			
• Widowed	1.1	----	3.7	5.9	2.3			
<u>Spouse/Partner Highest</u>								
<u>Level of Education</u>						9	20.48	.0152
• High Schl/Less	8.5	15.4	2.4	0.0				
• Some College	32.2	30.8	14.6	30.0				
• College Degree	30.5	46.2	19.5	30.0				
• Advanced Degree	28.8	7.7	63.4	40.0				
<u>Spouse/Partner</u>								
<u>Employment</u>						12	13.85	.3099
• Employed FT	60.3	69.2	73.2	60.0				
• Employed PT	17.2	30.8	12.2	10.0				
• Not Employed	8.6	0.0	4.9	0.0				
• Stud/Employ	5.2	0.0	9.8	20.0				
• Stud/Not Employ	8.6	0.0	0.0	10.0				

TABLE 1: CROSSTABULATIONS FOR BACKGROUND/EXPERIENCES
PAGE 2

VARIABLE	MALE		FEMALE		PERCENT T GROUP	df	Chi- Sq.	Significance
	MA MEAN AGE	AI	MA	AI				
<u>Originally Full Time</u>								
• Yes	71.6	81.0	67.9	82.4		3	2.419	.4899
• No	28.4	19.0	32.1	17.6				
<u>Currently Full Time</u>								
• Yes	65.3	71.4	55.6	82.4		3	5.512	.1379
• No	34.7	28.6	44.4	17.6				
<u>Doctoral Major</u>						15	24.94	.0507
• Education	24.7	28.6	42.5	29.4	32.2			
• Soc Sci	20.4	38.1	25.0	23.5	24.2			
• Phy Sci	21.5	14.3	6.3	17.6	14.7			
• Bus/Comm	12.9	0.0	11.3	17.6	11.4			
• Arts/Human	7.5	14.3	12.5	5.9	10.0			
• Math/Stat/Engin	12.9	4.8	2.5	5.9	7.6			
<u>Why Doctorate</u>						21	26.5	.1875
• Need it to Adv in Field	46.8	38.1	33.3	25.3	39.9			
• To Change Fields	3.2	4.8	2.5	11.8	3.8			
• Could not Find Job	2.1	4.8	----	----	1.4			
• To Increase Knowledge in My Field	20.2	14.3	27.2	17.6	22.1			
• Personal Interest	12.8	9.5	23.5	17.6	16.9			
• To Increase Earnings	7.4	----	3.7	----	4.7			
• Other	5.3	4.8	1.2	5.9	8.9			

TABLE 1: CROSSTABULATIONS FOR BACKGROUND/EXPERIENCES
PAGE 3

VARIABLE	MALE		FEMALE		PERCENT T GROUP	df	Chi- Sq.	Significance
	MA	AI	MA	AI				
MEAN AGE	35.6	37.1	37.6	35.1				
<u>Most Important Reason</u>								
<u>Chose Doc Program</u>						27	26.35	.4988
• Location	31.2	15.0	28.2	23.5	27.9			
• Financial Aid Offered	19.4	10.0	16.7	11.8	16.8			
• Quality	17.2	10.0	9.0	17.6	13.5			
• Other	6.5	30.0	12.8	23.5	12.5			
• Recruited by Fac	8.6	5.0	9.0	11.8	8.7			
<u>Position Expected to</u>								
<u>hold Immediately</u>						39	59.91	.0172
• College Faculty	40.0	25.0	48.8	41.2	42.0			
• Research/Priv Sector	14.7	5.0	2.5	11.8	9.0			
• Practice in a Clinic/Agency	7.4	0.0	12.5	5.9	8.5			
• Undecided	7.4	5.0	8.8	11.8	8.0			
• College Admin	6.3	15.0	3.8	10.0	5.7			
<u>Position Expected to</u>								
<u>hold in 5 yrs.</u>						33	57.86	.0047
• College Faculty	40.0	33.3	45.7	64.7	43.5			
• College Admin	11.6	9.5	7.4	0.0	8.9			
• Self Employed/ Priv Practice	6.3	14.3	8.6	5.9	7.9			
• Undecided	5.3	4.8	12.3	5.9	7.9			
• Research/Priv Sector	11.6	0.0	1.2	11.8	6.5			
<u>Do you have a Faculty</u>								
<u>Mentor?</u>						3	2.581	.4607
• Yes	69.2	60.0	64.9	82.4				
• No	30.8	40.0	35.1	17.6				

TABLE 1: CROSSTABULATIONS FOR BACKGROUND/EXPERIENCES
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VARIABLE	MALE		FEMALE		PERCENT T GROUP	df	Chi- Sq.	Significance
	MA	AI	MA	AI				
MEAN AGE	35.6	37.1	37.6	35.1				
<u>Time Taken to Locate a Mentor</u>						15	14.30	.5024
• 1 month	34.8	35.0	21.6	52.9				
• 1 semester	19.1	5.0	16.2	5.9				
• 1 year	9.0	5.0	18.1	5.9				
• 1st 2 years	5.6	5.0	10.8	11.8				
• Over 2 years	7.9	10.0	12.2	5.9				
• Not located one yet	23.6	40.0	31.1	17.6				
<u>Time Taken to Locate Mentor in Comparison with Other Students</u>						9	14.37	.1097
• Less Time than Others	34.8	33.3	26.0	58.8				
• About the Same	29.3	4.8	24.7	11.8				
• Took Longer	12.0	19.0	16.4	11.8				
• Have no Mentor	23.9	42.9	32.9	17.6				
<u>Is Advisor Same Race/ Ethnicity</u>						3	6.949	.0735
• Yes	22.6	0.0	14.5	11.8				
• No	77.4	100.0	85.5	88.2				
<u>Is Mentor Same Race/ Ethnicity</u>						3	6.120	.1059
• Yes	23.8	0.0	12.9	11.8				
• No	76.3	100.0	87.1	88.2				
<u>Is Advisor Same Gender</u>						3	54.89	.0000
• Yes	84.9	90.0	35.1	41.2				
• No	15.1	10.0	64.9	58.8				
<u>Is Mentor Same Gender</u>						3	40.61	.0000
• Yes	78.8	83.3	30.2	35.3				
• No	21.3	16.7	69.8	64.7				

TABLE 2A: FACTOR STRUCTURE FOR COMBINED GROUPS

Part I Extractions: 53 Items = 12 Factors = 67.9 Percent Variance

	Rotated Factors	Eigenvalue	Pct. of Var.	Cum. Pct.
I.	Satisfaction with Faculty Student Relations	13.303	29.6	29.6
II.	Academic Factor	2.830	6.3	35.9
III.	Minority Discrimination for Both Faculty/Students	2.356	5.2	41.1
IV.	Opportunity for Minority Students/Faculty	1.787	4.0	45.1
V.	Faculty Impact	1.738	3.9	48.9
VI.	Work Done: Student Preparedness	1.456	3.2	52.2
VII.	Career Opportunity	1.351	3.0	55.2
VIII.	Family Support	1.319	2.9	58.1
IX.	Student Interaction	1.145	2.5	60.6
X.	Scheduling Classes	1.119	2.5	63.1
XI.	Fairness/Grade Improvement	1.103	2.5	65.6
XII.	W/NH Faculty Expectation of Minority Students	1.032	2.3	67.9

TABLE 2B: FACTOR STRUCTURE FOR COMBINED GROUPS

Part I Extractions: 31 Items = 9 Factors = 69.4 Percent Variance

	Rotated Factors	Eigenvalue	Pct. of Var.	Cum. Pct.
I.	Student View of Advisor	6.509	21.0	21.0
II.	Student/Faculty Interaction	3.581	11.6	32.6
III.	Mentor Selection	2.732	8.8	41.4
IV.	Student Social Interaction	2.022	6.5	47.9
V.	Student and Advisor/Mentor Ethnic Similarity	1.642	5.3	53.2
VI.	Student and Advisor/Mentor Gender Similarity	1.391	4.5	57.7
VII.	Student and Minority Contact	1.293	4.2	61.9
VIII.	Student Professional Interaction	1.256	4.1	65.9
IX.	Minority Participation	1.071	3.5	69.4

TABLE 3: ONE-WAY ANOVA

FACTOR/VARIABLE	MALE				FEMALE				LSD* TEST	F RATIO	F PROB.
	MA		AI		MA		AI				
	X	SD	X	SD	X	SD	X	SD			
Undergrad Selectivity	933	166	991	128	929	124	990	109	C	1.663	.1763
UGPA	2.82	.636	2.95	.589	3.18	.572	3.25	.683	DF	5.845	.0008
DGPA	3.47	.616	3.47	.511	3.55	.570	3.41	.795		.4180	.7403
Honors Received	.336	.475	.381	.497	.209	.409	.235	.437	F	1.555	.2014
Rate Self	1.92	.802	2.00	1.04	2.13	.983	2.11	.696		.8840	.4502
Satisfaction with Fac/Stud Relations	51.03	12.66	44.80	14.25	49.91	12.50	51.17	9.02	BC	1.463	.2256
Minority Discrimina- tion Fac/Stud	7.13	2.08	6.38	2.17	6.77	2.72	5.88	2.91	D	1.631	.1833
Student Interaction	10.37	2.06	9.57	2.69	10.55	2.45	9.70	1.82	C	1.399	.2441
W/NH Fac Expec	2.86	1.10	2.66	1.19	2.98	1.06	3.47	1.06	AD	1.958	.1214
Stud View of Advisor	25.41	4.22	22.80	7.68	23.65	5.90	26.76	3.34	AFBE	3.368	.0195

LSD MATRIX

	AI(M)	AI(F)	MA(M)	MA(F)
AI(M)	*	A	B	C
AI(F)	A	*	D	E
MA(M)	B	D	*	F
MA(F)	C	E	F	*

*Denotes pairs of groups significantly different at the .10 level.

TABLE 3: ONE-WAY ANOVA
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FACTOR/VARIABLE	MALE				FEMALE				LSD* TEST	F RATIO	F PROB.
	MA		AI		MA		AI				
	X	SD	X	SD	X	SD	X	SD			
Stud/Advisor Ethnic Similarity	.1579	.366	.000	.000	.0617	.242	.1176	.332	BF	2.386	.0701
Stud/Advisor Gender Similarity	.621	.487	.476	.511	.172	.380	.294	.469	CDF	14.92	.0000
Mother's Occupation	3.35	.944	2.85	1.19	2.89	1.10	2.94	1.14	BF	3.406	.0186
Father's Occupation	2.34	.782	2.30	.864	1.98	.711	2.18	.750	F	3.323	.0207
Maximum Occupation	2.34	.782	2.30	.864	1.97	.706	2.18	.750	CF	3.560	.0152
Size of Community	5.24	2.19	4.75	2.80	5.61	2.07	3.58	2.15	DE	4.220	.0064
Degree Progress	4.01	2.30	4.80	2.68	4.16	2.53	5.29	2.61	DE	1.686	.1711
Total Ed Debt Owed	6.60	3.34	7.10	2.98	5.52	1.94	8.05	4.95	ACDF	4.327	.0056
Minority Stu/Fac Opportunity	2.78	.741	2.36	.771	2.52	.721	2.76	.652	ABF	2.976	.0326
Spouse/Partner Ed	2.79	.961	2.46	.877	3.43	.838	3.10	.875	CF	5.765	.0010

LSD MATRIX

	AI(M)	AI(F)	MA(M)	MA(F)
AI(M)	*	A	B	C
AI(F)	A	*	D	E
MA(M)	B	D	*	F
MA(F)	C	E	F	*

*Denotes pairs of groups significantly different at the .10 level.